IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

IMMERSION CORPORATION, *Plaintiff,* v. SAMSUNG ELECTRONICS AMERICA, INC.; SAMSUNG ELECTRONICS CO., LTD. *Defendants.*	Civil No 2:17-cv-572-JRG LEAD CASE Case No. 2:18-cv-00055-JRG **JURY TRIAL DEMANDED**

PLAINTIFF IMMERSION CORPORATION'S
OPENING CLAIM CONSTRUCTION BRIEF

TABLE OF CONTENTS

Page(s)

TABLE OF AUTHORITIES

Page(s)

Cases

TABLE OF AUTHORITIES

Page(s)

Other Authorities

I. INTRODUCTION

In accordance with the Docket Control Order in this case (Dkt. No. 65), Plaintiff Immersion Corporation ("Immersion") submits its positions regarding the construction of the four disputed terms. The asserted patents (along with clean copies of the claims as amended by a certificate of correction or during reexamination) are attached hereto as Exhibits A-I. Numbered exhibits are attached to the Declaration of Eugene Marder in Support of Immersion's Opening Claim Construction Brief ("Marder Decl."). The disputed claim terms at issue are set forth in Exhibit A to the Supplemental Joint Claim Construction and Prehearing Statement (Dkt. No. 66). A straightforward application of the tenets of claim construction favors adoption of Immersion's proposed constructions, which are supported by the intrinsic and extrinsic evidence, including the declaration of expert Robert Howe, as discussed below.

II. OVERVIEW OF THE TECHNOLOGY

The asserted patents relate to haptic systems and methods. Haptics is the simulation of the sense of touch in user interaction with computer applications by creating forces that the user feels. A problem with many electronic devices is that they don't "feel right"—what is perceived by the sense of touch can be inconsistent with what is perceived by other senses. For example, a virtual button displayed on a touch screen looks like a button, but it doesn't *feel* like a button—what the user is touching is hard glass that doesn't move when pressed. This inconsistency can be solved by employing a haptic effect, such as a short vibration, when the device recognizes that the user has touched the button. Haptic effects are generated by an actuator: a device that turns energy into force or motion, such as a motor. One way an actuator can generate vibrations is by spinning or oscillating a weight. Actuators can be used to restore a mechanical feel to graphical buttons by applying forces to a touch screen, reassuring the user that they've successfully pressed the button.

Actuators are frequently integrated into mobile electronic devices such as smartphones. The circuitry driving the actuator is typically coupled to the device's processor and the device's software and firmware manages and controls the haptic effects. This allows the developers of the device's user interfaces and applications to associate particular events or user interactions with particular haptic effects. In this way, the actuator is controlled by software to enhance the user's experience.

III. APPLICABLE LEGAL PRINCIPLES

Claim terms bear a "heavy presumption" that they carry their "ordinary and customary meaning." *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002); *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, No. 14-cv-0911, 2015 U.S. Dist. LEXIS 151310, at *7 (E.D. Tex. Nov. 7, 2015) (same); *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (*en banc*) (explaining that terms are "generally given their ordinary and customary meaning"). "The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation." *Phillips*, 415 F.3d at 1313. This is because "inventors are typically persons skilled in the field of the invention[,] and . . . patents are addressed to and intended to be read by others of skill in the pertinent art." *Id.* However, "[i]n some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction . . . involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314. To do otherwise would convert claim construction from "a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims" into "an obligatory exercise in redundancy." *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997).

A disputed term should be construed by examining the evidence of record. *See Phillips*, 415 F.3d at 1313. Within the class of intrinsic evidence, "the specification is always highly relevant to the claim construction analysis." *Id.* at 1315 (quotation marks omitted). "Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* (internal citation and quotation marks omitted). In addition, extrinsic evidence concerning scientific principles, technical terms, and the state of the art showing what a person of skill in the art would have understood disputed claim language to mean are relevant to claim construction. *See, e.g.*, *id.* at 1314; *Zodiac Pool Care, Inc. v. Hoffinger Indus., Inc.*, 206 F.3d 1408, 1414 (Fed. Cir. 2000).

IV. DISPUTED CLAIM CONSTRUCTIONS

In the following sections, Immersion explains, on a term-by-term basis, which of the disputed claim terms genuinely need construction and set forth why Immersion's proposed constructions should be adopted.

A. "outputting a force directly on said touch input device" ('846 Patent)

The phrase "outputting a force directly on said touch input device" should be given its plain meaning as understood by a person of skill in the art at the time of the invention. This phrase concerns the transmission of forces from an actuator to the touch input device (and from there, to the user, whether to the user's finger or a stylus held by the user). The parties' disagreement is whether outputting a force "directly" includes cases where the force can be transmitted from an actuator to the touch input device through connected rigid bodies. As discussed below, the ordinary meaning and the intrinsic and extrinsic evidence all support the conclusion that a force may be imparted "directly" through connected rigid bodies as well as without intervening structure. In contrast, Samsung proposes a construction that adds a structural limitation contrary to the plain and ordinary meaning in the art, and is contrary to the use of the term "directly" in the intrinsic evidence.

1. The ordinary and customary meaning of "outputting a force directly" is to output the force through connected rigid bodies or without intervening structure

In the field of haptics, the ordinary meaning of "outputting a force directly" is outputting or imparting a force "through connected rigid bodies ***or*** without intervening structure." *See* Declaration of Robert D. Howe in Support of Immersion's Opening Claim Construction Brief ("Howe Decl.") ¶¶ 42, 58. Dr. Howe explains that, as people of ordinary skill understood, mechanical forces are applied directly when they are imparted without intervening structure or through connected rigid bodies without significant compliance. *Id.* ¶¶ 42, 45, 46, 48. Mechanical forces are applied indirectly when they are imparted through non-rigid intervening structures such as compliant structures (*e.g.*, springs or foam) or transmission systems (*e.g.*, gearboxes or pulleys), which are designed to attenuate, amplify, or otherwise alter the forces. *Id.* ¶¶ 42-43.

According to Dr. Howe, the concept of force transmission is well-understood in engineering, and is explained in standard textbooks for engineering courses on mechanical systems and mechanical vibrations. *Id.* ¶¶ 43, 47. The key concept is that a compliant element can interfere with the transmission of forces within a structure or system. *Id.* ¶¶ 43-44. As Dr. Howe explains, the role of compliance in the transmission of forces is explained and modeled in the textbook MECHANICAL VIBRATIONS: THEORY AND APPLICATION. Section 4.5 of the book shows that the presence of compliant elements can greatly alter vibration transmission for different frequencies of vibration. *Id.* ¶ 43. Such intervening compliant elements can be problematic for a touch input device because design goal is usually to transmit forces to the touch input device (and thereon to the user) with minimal attenuation and distortion. *Id.*

On the other hand, a rigid structure readily transmits force. Importantly, this structure can be a single rigid element, or it can be a structure composed of multiple rigid elements that

are rigidly connected, so that there is no significant compliance between them. *Id.* ¶¶ 45-46. When rigid bodies are coupled such that they are no longer free to move independently from each other, any force or motion that affects one body will also affect the other. For example, if two metal blocks are glued together or fastened together with screws, they form a single rigid body through which forces will be transmitted without alteration. *Id.* ¶ 45. Likewise, a linkage formed of connected rigid links can transmit forces directly from one end of the linkage to the other, because the linkage does not attenuate, amplify, or otherwise alter the forces.[1] *Id.*

The fact that multiple elements rigidly connected form a single structure from the point of view of direct application of forces is well-known. Howe Decl. ¶¶ 46-53. And touch input devices are composed of multiple elements that are rigidly attached. For example, touch screens typically include an outer glass contact surface, a display, capacitive touch location sensing elements, a frame or clips to enable mounting to other components, and so forth. *Id.* ¶ 46. These components are typically glued or screwed together; and because these components are rigidly connected, they directly transmit haptic forces. *Id*.

For this reason, "outputting a force directly on said touch input device" would be understood by one skilled in the art to mean that the forces can be applied by the actuator to the touch input device through connected rigid bodies (*i.e.*, without significant intervening compliant structure), as well as without any intervening structure between them. *Id.* ¶ 48.

Dr. Howe's opinion is confirmed by the testimony of Louis Rosenberg, an experienced engineer and one of the inventors of the '846 patent, as well as of the '019 and '232 patents discussed below. Dr. Rosenberg was questioned at a deposition about the meaning of "directly."

[1] *See* Marder Decl. Ex. 13, H. Kazerooni, "Statically balanced direct drive manipulator," 7 ROBOTICA 143-49, 143 (1989) (disadvantage of direct-drive robot arm with four-bar linkage is that "the motor vibrations in the direct drive system are ***directly*** transferred to the robot endpoint") (emphasis added).

Dr. Rosenberg explained that "It's a directly between the actuator and the device. It's not literally directly because nothing in the world is ever direct -- like even if you were going to glue an actuator to something, there would be glue between the actuator." Marder Decl. Ex. 1 [10/4/2012 Rosenberg Dep. Tr.] at 113:2-6. Dr. Rosenberg added: "[i]n mechanical engineering, you talk about a force being applied directly, you mean it's -- it's not been altered. There's not a spring. There's not a transmission. There's not a gear. It's the force that you put in is the same as the force that you got out. It's direct." *Id.* at 113:7-14; *see also id.* at 113:15-117:12. Dr. Rosenberg confirmed that forces could be output directly on another object if it were accomplished through connected rigid bodies without significant compliance.

2. The intrinsic evidence confirms that forces may be output directly through rigid bodies.

The intrinsic evidence is consistent with the plain and ordinary meaning of what it means to apply a force "directly on" something, as discussed above; it is not consistent with Samsung's overly restrictive proposed construction. Indeed, Samsung's proposal is not consistent with the claim language itself. Samsung's proposal requires the actuator to be in direct physical contact with the touch input device—that's what "no intervening structure" means. But the claim does not require direct physical contact—only that the actuator and touch input device be ***coupled***. For example:

> and at least one actuator ***coupled*** to said touch input device, said actuator outputting a force on said touch input device to provide a haptic sensation to said user contacting said touch surface, wherein said actuator outputs said force based on force information output by said processor, said actuator outputting a force ***directly*** on said touch input device.

'846 patent, Claim 1 (per 7/31/2012 Certificate of Correction (Ex. B)) (emphasis added). The claims require only that that the actuator ***impart or output a force*** "directly," not that the actuator be ***coupled*** "directly" (that is, physically attached) to the touch input device or touch screen.

"Coupling" does not require components to be in direct contact, but only that they be mechanically joined or connected.[2] Howe Decl. ¶ 55. Being "coupled" encompasses connection through rigid bodies, such that the actuator's force would be outputted directly on the touch input device. *Id.*

Moreover, the '846 patent specification demonstrates that the inventors were aware of the principle that coupling via rigid bodies allowed for direct transmission of forces, whereas coupling via compliant materials may not. Howe Decl. ¶ 54. The specification states that "[t]he touchpad 16 can be coupled only to the actuator 42," as discussed in claim 1, or can have other couplings "to the housing of the computer device at other locations besides the actuators." '288 patent at 8:36-40. But the specification notes that "the other couplings are compliant connections, using a material or element such as a spring or foam," in order to avoid transferring haptic forces to the housing. *Id.*; *see also* Howe Decl. ¶ 54. The relevant distinction, then, is not whether the actuator and touch input device are in direct physical contact, but that the coupling between them is not compliant. Howe Decl. ¶ 54.

Other Immersion patents related to the '846 patent confirm that the ordinary meaning includes outputting a force through connected rigid bodies. U.S. Patent No. 6,088,019 ("the '019 patent"), which the '846 patent incorporates by reference, discloses a "direct-drive" system in which a "single actuator can be provided that ***directly*** applies force to the user manipulatable object, thus saving cost by the elimination of multiple actuators and complex force transmission and control systems." *See* Marder Decl. Ex. 2 ['019 patent] at 3:46-50 (emphasis added); *see also id.* at 2:37-41; 9:35-42. The use of a direct-drive system, which may include intervening

[2] Dictionary definitions of "couple" confirm this understanding, and none suggest a requirement of direct contact. *See, e.g.*, Marder Decl. Ex. 7, MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 266 (1993).

structures, is an example of the direct transmission of force. The use of a transmission system (*e.g.*, gearbox, pulleys) is an example of an indirect transmission of force. A force output "directly" on an object is therefore a force that is output without a transmission system, and not, as Samsung proposes, entirely without intervening structure. *See* Howe Decl. ¶ 56.

Figure 4 of the '019 patent depicts the "mouse embodiment" of "a system in which the actuator outputs forces directly" through rigid bodies,[3] in which:

> actuator 100 [*annotated in red*] is positioned between two members 162 and 164 [*annotated in yellow*] provided inside mouse 150 . . . . Member 162 is rigidly coupled to cover portion 170 [*annotated in green*], and member 164 is rigidly coupled to base portion 168. The coil portion 104 of actuator 100 can be coupled to member 162, while the housing portion 102 of the actuator can be coupled to member 164 (these positions can be reversed in alternate embodiments).

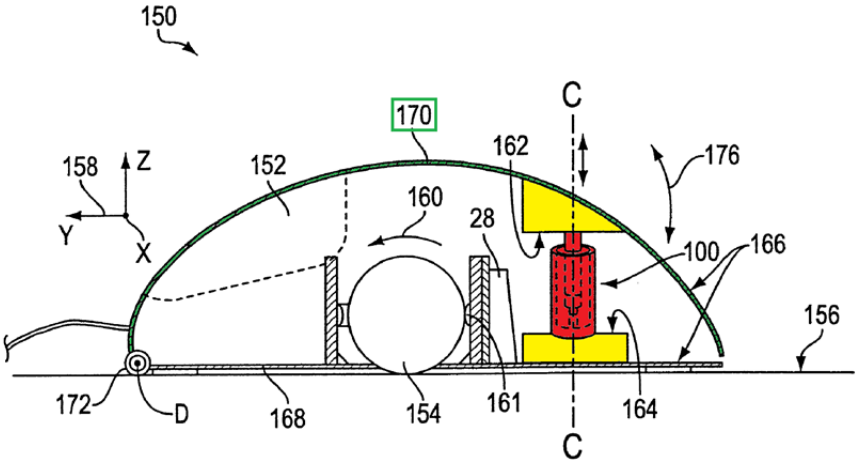

FIG. 4

Marder Decl. Ex. 2 ['019 patent] at Fig. 4 (annotated), 13:31-14:55. This embodiment shows direct transmission of force from the actuator (annotated in red) to the mouse housing through connected rigid bodies (annotated in yellow), and is an embodiment of claim 16 of the '019 patent, which requires that the "actuator outputs said force ***directly*** on said mouse housing, wherein no transmission system is provided between said actuator and said mouse housing." *Id.*,

[3] Marder Decl. Ex. 2 ['019 patent] at 9:37-38; Howe Decl. ¶ 56.

claim 16 (emphasis added); Howe Decl. ¶ 65. This disclosure therefore demonstrates that "directly," as used in Immersion's patents, comports with the ordinary meaning discussed above.

In addition, U.S. Patent No. 7,548,232, a child of the '846 patent,[4] depicts an embodiment in which the "piezoelectric transducer provide[s] haptic feedback, where the transducer applies (non-inertial) vibrations ***directly*** to the touchpad (or touchscreen)." Marder Decl. Ex. 3 ['232 patent] at 18:15-18. In this embodiment, "[t]he touchpad member 238 can ***rest on a spacer*** 240" which "rests on the edge of a piezo metal diaphragm 231, which is part of the piezo transducer." *Id.* at 18:24-36 (emphasis added). This configuration is depicted in Figure 8B:

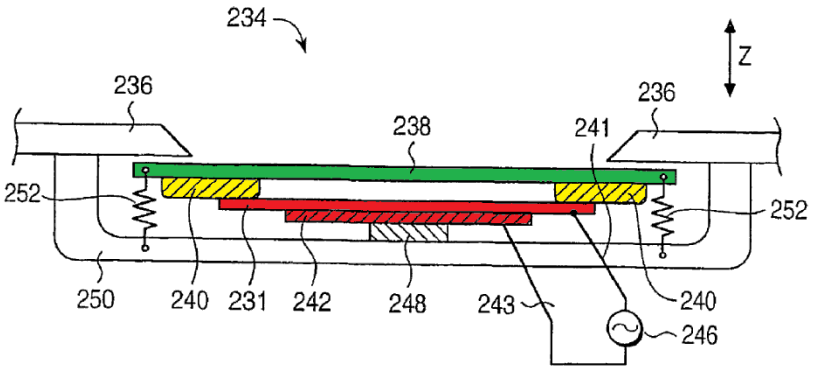

FIG. 8B

Id. at Fig. 8b (annotated). The touchpad (green) is coupled to the actuator (the piezo transducer, red) by a spacer (yellow)—yet the '232 patent states that the actuator applies its vibrations ***directly*** to the touchpad, even though the spacer is intervening structure. *Id.* at 18:15-18. These patents confirm that an actuator may output a force directly through rigid bodies, and demonstrate that Samsung's proposal is too narrow. *See* Howe Decl. ¶ 57.

[4] The '232 patent is a child of U.S. Patent No. 6,822,635, which is a child of the '846 patent. The '635 patent includes substantially identical disclosure to the '232 patent. Marder Decl. Ex. 4 ['635 patent] at Fig. 8b; 17:61-19:10.

B. "touch input device" ('846 Patent)

The term "touch input device" does not require construction. A "touch input device" is a device that allows a user to provide input by touching an area on the device. Howe Decl. ¶ 16. The asserted claims of the '846 patent claim inventions that provide users of touch input devices with haptic feedback. '846 patent, Abstract; 16:62-64. The preferred embodiments of the claimed touch input devices determine the location of a user's touch and provide coordinate data to a processor so that the processor may output the appropriate force information to provide haptic feedback to the user. *Id.* at 4:6-8 ("In operation, the touchpad 16 ***inputs coordinate data*** to the main microprocessor(s) of the computer 10 based on the sensed location of an object on (or near) the touchpad.") (emphasis added). Disclosed embodiments of the "touch input devices" include touchpads and touch screens. *See, e.g., id.* at Abstract ("The touch input device can be a touchpad separate from the computer's display screen, or can be a touch screen."). Both are examples of devices that allow a user to provide input by touching an area on the device.

The parties agree that "touch input device" is a "device that allows a user to provide input by touching an area on the device." The parties also agree that a "touch input device" may include a touch surface, a display, and a touch sensor. But Samsung would add the restrictions that a "touch input device" ***cannot*** include a bezel, chassis, or controller. Nothing in the claim language or specification supports limiting the scope of a touch input device as argued by Samsung. *See Linear Tech. Corp. v. ITC*, 566 F.3d 1049, 1059-60 (Fed. Cir. 2009) ("limitation[s] should be accorded a scope commensurate with the . . . patent's specification"). Indeed, contrary to Samsung's proposed restrictions, the specification expressly states that a touch input device ***may*** include a local microprocessor (a type of controller). The additional terms that Samsung would add to the construction in its proposed negative limitation—"bezel"

and "chassis"—appear nowhere in the patent, and there is nothing in the intrinsic evidence to suggest that the terms should be specifically included in any construction.

1. Nothing in the intrinsic or extrinsic evidence requires restricting the plain and ordinary meaning of "touch input device."

The plain and ordinary meaning of "touch input device" says nothing about bezels, chassis, or controllers. Howe Decl. ¶¶ 17, 21, 32-34. The applicable rule is clear: courts "depart from the plain and ordinary meaning of claim terms based on the specification in only two instances: lexicography and disavowal." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014). "'To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning' and must 'clearly express an intent to redefine the term.'" *Id.* (citation omitted). "Disavowal requires that 'the specification or prosecution history make clear that the invention does not include a particular feature,'. . . or is clearly limited to a particular form of the invention . . . ." *Id.* at 1372 (citations omitted). Here, the '846 patent does not contain any lexicography or disavowal because it does not use any words of "manifest exclusion or restriction" for the term "touch input device." *Meda Pharms. Inc. v. Apotex Inc.*, No. 14-1453-LPS, 2016 WL 2760336, at *2 (D. Del. May 12, 2016) ("It bears emphasis that . . . the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.") (quotation and citation omitted).

To be clear, Immersion does not assert that every touch input device ***must*** include a bezel, chassis, or controller. There is extrinsic evidence showing touchpads or touch screens lacking or being separate from bezels, chassis, and controllers. But there is nothing in the intrinsic record or the understanding of one of ordinary skill in the art that ***forbids*** these components from being part of a touch input device. Howe Decl. ¶¶ 17-19, 21, 32-34.

2. The evidence shows that a "touch input device" can include a controller.

The '846 specification describes embodiments of "touch input devices" that expressly include a local microprocessor. Howe Decl. ¶¶ 24-27. For example:

> The touchpad 16 can include circuitry necessary to report control signals to the microprocessor of the host computer 10 and to process command signals from the host's microprocessor. For example, appropriate sensors (and related circuitry) are used to report the position of the user's finger on the touchpad 16. . . . In some embodiments, a separate, local microprocessor can be provided for the touchpad 16 to both report touchpad sensor data to the host and/or to carry out force commands received from the host, such commands including, for example, the type of haptic sensation and parameters describing the commanded haptic sensation.

'846 Patent, 6:24-37; *see also* 9:60-63 ("The touchpad 16 can also be integrated with an elastomeric layer and/or a printed circuit board in a sub-assembly, where one or more actuators are coupled to the printed circuit board to provide tactile sensations to the touchpad 16."). A person of skill in the art would understand that a local microprocessor (the given example of circuitry) is a controller. Howe Decl. ¶¶ 22-23, 30.

Furthermore, in discussing "[a]rchitectures and control methods that can be used for reading sensor signals and providing haptic feedback for a device," the '846 patent relies on and incorporates by reference U.S. Patent No. 5,734,373. '846 patent, 6:49-54. Figure 1 of the '373 patent is a block diagram showing "Force Feedback Interface Device" that" includes a local microprocessor" coupled to "sensors" (the depicted sensor interface 36 is optional). Marder Decl. Ex. 5 ['373 patent] at 8:35-38. The sensors "sense the position, motion, and/or other characteristics of a user object 34 of the interface device 14 along one or more degrees of freedom and provide signals to microprocessor 26 including information representative of those characteristics." *Id.* at 10:10-14. The local microprocessor can convert the sensor signals to determine the position of the user object and send position value signals to a host computer. *Id.*

at 10:48-11:9. This device architecture can be used for a touchpad. '846 patent, 6:49-54; Howe Decl. ¶¶ 22-27.

U.S. Patent No. 6,088,019, also incorporated by reference, likewise describes an interface device that includes a local microprocessor "dedicated to force feedback and sensor I/O of [the] interface device," and names specific chips that can serve as the local microprocessor: "Suitable microprocessors for use as local microprocessor 26 include the MC68HC711E9 by Motorola, the PIC16C74 by Microchip, and the 82930AX by Intel Corp., for example." Marder Decl. Ex. 2 ['019 patent] at 6:20-46; *see also* Marder Decl. Ex. 5 ['373 patent] at 9:2-5. These particular microprocessors would be commonly understood as controllers. Howe Decl. ¶ 30. Indeed, the PIC16C74 is identified by its manufacturer as a "microcontroller." Marder Decl. Ex. 6 [*PIC16C74, Device Overview*]. Thus, the intrinsic evidence shows that a "touch input device" may include a local microprocessor or controller. Howe Decl. ¶¶ 24-32.

Extrinsic evidence does not change the analysis. Extrinsic evidence showing touchpads and touch screens without controllers does not mean that a "touch input device" ***never*** includes a controller. Indeed, the extrinsic evidence suggests persons skilled in the art would understand "touch input device" to be broad, and could encompass controllers as components. *Id.* ¶¶ 16-21. For example, this is evident from applicable dictionary definitions:

- **input device**: A peripheral device whose purpose is to allow the user to give input to a computer system. Examples of input devices are keyboards, mice, joysticks, and styluses.[5]
- **input device**: A device used to enter data into a computer system. *Note:* Commonly used input devices include light pens and keyboards. *Synonym:* input unit.[6]
- **input device**: Synonym for input unit.[7]

[5] Marder Decl. Ex. 8, MICROSOFT PRESS COMPUTER DICTIONARY 252 (3d ed. 1997).
[6] Marder Decl. Ex. 9, IEEE STANDARD DICTIONARY OF ELECTRICAL & ELECTRONICS TERMS 524 (6th ed. 1997).
[7] Marder Decl. Ex. 10, IBM DICTIONARY OF COMPUTING 341 (10th ed. 1993).

- **input unit**: A device in a data processing system by means of which data can be entered into the system. . . . Synonymous with input device.[8]
- **touch-sensitive:** Pertaining to a device such as a keypad or screen that generates coordinate data when a pointing device approaches or contacts the surface, thereby allowing a user to interact directly with a computer without entering commands from a keyboard.[9]
- **touchscreen:** A touch-sensitive display screen, whereby users can interact with a computer and select options by simply pointing with a finger instead of using a pointing device such as a mouse.[10]
- **touch screen:** A video screen constructed to sense when one is touching it, and to be able to furnish a computer with precise information as to exactly where on the screen the touch occurred.[11]
- **touch screen:** (1) A display device, that allows a user to interact with a computer system by touching an area on its screen. (2) A touch-sensitive display screen on a visual display unit.[12]

The fact that touch screens "generate[] coordinate data" and "furnish a computer with precise information as to exactly where on the screen the touch occurred" suggests that they do have local microprocessors (or other circuitry) to perform that function. Thus, a person of ordinary skill in the art would not necessarily controllers from "touch input device." Howe Decl. ¶¶ 15-34.

3. The evidence shows that a "touch input device" can include a bezel or chassis.

The dictionary definitions cited above also do not mention bezels or chassis, much less exclude them. Rather, a person of skill in the art would have recognized that these components can be part of a touch input device. Indeed, the illustration accompanying the definition of "touch screen" in the IBM Dictionary of Computing shows a feature that appears to be a bezel:

[8] Marder Decl. Ex. 10, IBM DICTIONARY OF COMPUTING 343 (10th ed. 1993).
[9] Marder Decl. Ex. 10, IBM DICTIONARY OF COMPUTING 697 (10th ed. 1993).
[10] Marder Decl. Ex. 11, MODERN DICTIONARY OF ELECTRONICS 789 (7th ed. 1999).
[11] Marder Decl. Ex. 12, THE ILLUSTRATED DICTIONARY OF MICROCOMPUTERS 400 (3d ed. 1990).
[12] Marder Decl. Ex. 10, IBM DICTIONARY OF COMPUTING 697 (10th ed. 1993).

touch screen (1) A display device, that allows the user to interact with a computer system by touching an area on its screen. Synonymous with touch-sensitive screen. (T) (2) A touch-sensitive display screen on a visual display unit. See Figure 154.

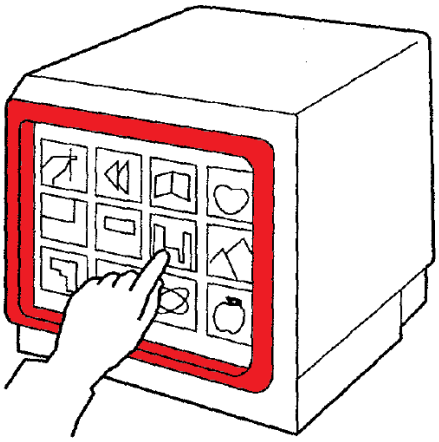

Figure 154. Touch Screen

Marder Decl. Ex. 10, IBM DICTIONARY OF COMPUTING 697 (10th ed. 1993) (annotated in red).

Furthermore, it was known that, in cases where touchpads or touch screens are purchased for integration into other products, they would commonly include a bezel or chassis to provide mechanical stability and to facilitate their integration. Howe Decl. ¶ 33. For example, a touch screen may include a chassis or bezel to prevent electrical or mechanical interference with other components of the device. *Id.*

Samsung's proposal to exclude a bezel, chassis, and controller from the definition of "touch input device" is not supported by the evidence and should be rejected. If the Court does construe the term, it should be given its plain meaning.

C. "approximately planar touch surface" ('846 Patent)

Samsung argues that the term "approximately planar touch surface" in claim 1 of the '846 patent is indefinite. It is not. A claim is only indefinite if, when "read in light of the specification delineating the patent, and the prosecution history, [the claim] fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus,*

Inc. v. Biosig Instruments, Inc., —— U.S. ——, 134 S.Ct. 2120, 2124 (2014). "Reasonable certainty" does not require "absolute or mathematical precision." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1381 (Fed. Cir. 2015). As the Defendant, Samsung has the burden of proving indefiniteness by clear and convincing evidence. *See BASF Corporation v. Johnson Matthey Inc.*, 875 F.3d 1360, 1377 (Fed. Cir. 2017).

Recently, the Federal Circuit once again "rejected the proposition that claims involving terms of degree are inherently indefinite." *Sonix Tech. Co. v. Publ'ns Int'l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017). Because "the definiteness requirement must take into account the inherent limitations of language . . . words like 'approximate' and 'about' may appropriately be used to 'avoid a strict numerical boundary to the specified parameter.'" *Max Blu Techs., LLC v. Cinedigm Corp.*, No. 2:15-cv-1369-JRG, 2016 WL 33688801, at *30 (E.D. Tex. July 12, 2016) (*citing Nautilus*, 134 S. Ct. at 2128; *Ortho-McNeil Pharm., Inc. v. Caraco Pharm. Labs., Ltd.*, 476 F.3d 1321, 1326 (Fed. Cir. 2007)). Accordingly, courts commonly find terms of degree such as "approximately" and "substantially" to be definite when they allow the patentee to account for variation in the context of the invention. *See Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1359 (Fed. Cir. 2012) ("This court has repeatedly confirmed that relative terms such as 'substantially' do not render patent claims so unclear as to prevent a person of skill in the art from ascertaining the scope of the claim. . . The criticized words ['approach each other,' 'close to,' 'substantially equal,' and 'closely approximate'] are ubiquitous in patent claims.") (internal citations omitted); *Verve LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002) ("Expressions such as 'substantially' are used in patent documents when warranted by the nature of the invention, in order to accommodate the minor variations that may be appropriate to secure the invention.").

The ’846 patent claims similarly use the phrase “approximately planar” to account for minor variations. For example, a skilled artisan would understand that the touch surface may need to be flexible (*e.g.*, not perfectly planar) to allow for movement. Howe Decl. ¶¶ 37-38; *see also* ’846 patent, 5:24-30, 16:45-61. While a perfectly flat touch surface is desirable, absolute precision may not be possible or practical due to engineering constraints and the nature of the technology. Howe Decl. ¶ 36; *see Imperium (IP) Holdings, Inc. v. Apple, Inc.*, 920 F. Supp. 2d 747 (E.D. Tex. Jan. 28, 2013) (finding the term “approximately aligns” to be definite because the term allowed claims to account for variation in distance pixels were shifted from optical center); *Fujitsu Ltd. v. Tellabs Operations, Inc.*, 821 F.Supp. 2d 1009 (N.D. Ill. Sept. 29, 2011) (holding claim terms “substantially even” and “substantially flat” were definite given that a skilled artisan would understand that an optical amplifier would not be able to provide perfectly flat or perfectly even gain across wavelengths).

The ’846 specification describes several embodiments that illustrate an “approximately,” but not “exactly,” planar touch surface. *See Imperium*, 920 F. Supp. at 762 (holding that the word “substantially” did not render a term indefinite where the specification made clear that momentary deviations were sometimes required). For instance, the ’846 specification describes embodiments in which actuators are placed at different positions under the touch surface, which may cause some areas of the touch surface to be “flexed or otherwise moved with respect to other portions of the pad.” ’846 patent, 5:10-30. For these embodiments, one of ordinary skill would understand that the touch surface may not be perfectly planar and would also understand the boundaries of how to achieve these embodiments in light of the specification. Howe Decl. ¶ 37. In another example, the specification describes embodiments in which the touch screen is textured or otherwise physically marked with lines or borders to demarcate different areas. ’846

patent, 15:20-26. In these instances, too, the touch surface would not be exactly planar, but "approximately planar" suffices to inform a person of skill in the art about the scope of the invention. Howe Decl. ¶ 39.

Additionally, terms involving approximate planarity have been found to be definite because one of ordinary skill would understand the boundaries of the term based on the context of the invention. In *BOC Health Care, Inc. v. Nellcor Inc.*, the court found that the term "substantially planar" was sufficiently definite. 892 F. Supp. 598, 613 (D. Del. 1995) (further construing the term to mean a structure "having substantially flat or flush surfaces"); *see also Deere*, 703 F.3d at 1359 (holding that the term "substantially planar" reasonably described the claimed subject matter to a skilled artisan). And in *Max Blu*, the court found the term "substantially flat and coplanar" to be definite because a "substantially" flat component would be "suitable" for the application at hand. *Max Blu*, 2016 WL 3688801 at *28. Similarly, in *Actavis Laboratories*, the court found the term "substantially flat" to be definite as limited by the purpose of the flatness: to reduce space for packaging and shipping. *Actavis Labs. UT, Inc. v. UCB, Inc.*, No. 2:15-CV-1001-JRG-RSP, 2016 WL 3678987, at *13-14 (E.D. Tex. July 11, 2016).

Consistent with these cases, the degree of planarity for the term "approximately planar touch surface" in the '846 patent is definite. One of ordinary skill in the art would understand the limits of the claim given the purpose of a touch input device including an approximately planar touch surface, which is to "input a position signal" to the computer "based on [the] location of user contact on the touch surface." '846 patent at 2:5-20; Howe Decl. ¶ 40. They would also understand that a touch surface, such as that of a touch pad or a mobile phone screen, should be generally flat to be suitable for its function, for the user to provide input by moving their finger across the surface. '846 patent at 4:45-49; Howe Decl. ¶¶ 40-41. Accordingly, the

term "approximately planar touch surface" is sufficiently definite. If the Court elects to construe the phrase, it should be given the meaning that its constituent words impart to it, which is "substantially flat touch surface," "generally flat touch surface," or "flat or nearly flat touch surface," which are synonymous.

D. "touch screen" ('720 Patent; '181 Patent)

Like "touch input device," the term "touch screen" does not require construction. A "touch screen" is a type of "touch input device." *See, e.g.*, '720 patent at Abstract; '181 patent, at Abstract. The touch screen embodiments are similar to their touchpad counterparts: "The touch screen 82 provides haptic feedback to the user similarly to the touchpad 16 described in previous embodiments." '720 patent, Certificate of Correction at 2; *see also* '181 patent at 15:54-56. Samsung's proposed exclusion of a bezel, chassis, or controller from "touch screen" is therefore improper for the same reasons discussed with respect to "touch input device."

V. CONCLUSION

For the foregoing reasons, Immersion respectfully requests that the Court adopt Immersion's proposed constructions, which find proper support in the intrinsic record and the understanding of a person of ordinary skill in the art, and reject Samsung's proposed constructions.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was filed electronically in compliance with Local Rule CV-5(a). Therefore, this document was served on all counsel who are deemed to have consented to electronic service. Local Rule CV-5(a)(3)(A). Pursuant to Fed. R. Civ. P. 5(d) and Local Rule CV-5(d) and (e), all other counsel of record not deemed to have consented to electronic service were served with a true and correct copy of the foregoing by email on this the 28th day of August, 2018.

/s/ Andrea Fair